

and found them very good. We also ate roasted seeds, but found them less agreeable, perhaps because they had not been roasted properly.

While Mr. H. Pittier was in Washington recently, *Calatola* seeds were shown him. He recognized them immediately, and recounted that once, while lost in the mountains of Costa Rica, and without food, he ate some of the seeds and was made very sick by them. It seems probable, therefore, that the seeds of *C. costaricensis* possess the properties ascribed to those of the Mexican species.

The stones of *Calatola costaricensis* exhibit considerable variation in size and form, those from the region of Santa María being longer and narrower than those from the central cordillera. It may be that when more ample material has been assembled, it will be found that two species are represented in Costa Rica.

BOTANY.—*Five new American Melampodiinae.*¹ S. F. BLAKE,
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This paper contains descriptions of five new tropical American *Asteraceae* of the subtribe *Melampodiinae*, as well as a record of range extension for a unique species of *Ichthyothere* described in this Journal several years ago.

Clibadium laxum Blake, sp. nov.

Section *Euclibadium*; plant strigillose; leaves large, ovate, long-petioled, serrate, submembranous; heads medium-sized, remote, in very loose divergent-branched panicles; phyllaries 1–2; pistillate flowers 9, hermaphrodite 10–13; fertile ovaries pubescent at apex.

“Branched herb, 2–2.5 m. high;” stem stout (7 mm. thick above), pithy, indistinctly about 6-angled, rather densely short-strigose; leaves opposite, those subtending the upper branches of the inflorescence alternate; petioles strigillose, sulcate above, margined above by the decurrent leaf blades, the naked portion 2.5–9 cm. long; blades ovate, those below the inflorescence more broadly so, 23.5 cm. long, 15 cm. wide, acuminate, at base truncate-rounded and shortly decurrent on the petiole, those subtending the principal branches of the inflorescence long-acuminate, cuneate at base, 14–20 cm. long, 6–9 cm. wide, all thin, nearly equally green on both sides, coarsely and bluntly serrate (teeth mucronulate-tipped, depressed, 2–3 per cm.), lepidote-strigillose and barely roughish above (the hairs mostly deciduous except for the bases), sparsely strigillose beneath, tripli- or quintuplinerved within 4.5 cm. of base, the veins prominent beneath, the principal veinlets prominulous; panicles many-headed, very loose, ternately divided, about 17 cm. wide, strigillose, on peduncles 8 cm. long or less, the bracts subulate-filiform, 2–6 mm. long; heads sessile, remote (usually 3–10 mm. apart), in flower oblong, 6 mm. long, 3.5 mm. thick, in fruit depressed-globose, 3.5 mm. long, 4.5 mm. thick; phyllaries 1 or 2, ovate to suborbicular-ovate, 3 mm. long, 2.2 mm. wide, acutish to obtuse, 5–7-nerved, ciliate, sparsely strigillose, whitish, subscarious; pistillate flowers 9, all paleate, the hermaphrodite 10–13, all but the 2 or 3

¹ Received July 30, 1926.

innermost paleate; pales of the pistillate flowers suborbiculate-ovate, up to 4 mm. long, 2.8 mm. wide, acutish or obtuse, about 6-nerved; pales of the hermaphrodite flowers oval-oblong, blunt, 1.8–2.8 mm. long, 3–5-nerved, ciliate; pistillate corollas white, obscurely glandular at apex, unequally 3-toothed, 2 mm. long; hermaphrodite corollas white, 3.2 mm. long, hispidulous on the teeth; achenes suborbicular-obovoid, 1.8–2 mm. long, 1.6–1.8 mm. wide, obcompressed, fuscous, hispidulous at apex; sterile ovaries long-pilose especially toward apex, 1–1.2 mm. long.

ECUADOR: Teresita, 3 kilometers west of Bucay, Province of Guayas, altitude 270 meters, 5–7 July 1923, *A. S. Hitchcock* 20430 (TYPE no. 1,195,383, U. S. Nat. Herb.).

The only close ally of this species is *Clibadium remotiflorum* O. E. Schulz, of Brazil and Bolivia, which has 4 or 5 phyllaries, larger heads, smaller leaves, and shorter petioles.

***Clibadium microcephalum* Blake, sp. nov.**

Section *Euclibadium*; plant strigillose; leaves large, ovate, long-petioled, membranous, depressed-serrate; heads tiny, sessile or subsessile, crowded in small glomerules; pistillate flowers 3, hermaphrodite 3–4; fertile ovaries pubescent at apex.

"Shrub;" stem subangulate, striatulate, strigillose, 5 mm. thick just below the inflorescence; leaves (only uppermost seen) subopposite; petioles strigillose, margined above by the narrowly decurrent leaf blades, the naked portion 4–5 cm. long; blades ovate, 24–28 cm. long, 11.5–14 cm. wide, acuminate, cuneate or cuneate-rounded at base and then narrowly decurrent on the upper part of the petiole, depressed-serrate (teeth mucronulate-tipped, 1–3 per cm.), about equally green on both sides and sparsely strigillose, roughish above and there with the hairs mostly deciduous except for their lepidote bases, quintuplinerved within about 4 cm. of base, the principal veinlets prominulous beneath, scarcely so above; panicles ternate at apex of stem, many-headed, flattish, 7–10.5 cm. wide, densely strigillose, ternately divided, on peduncles 3.5–11 cm. long, the heads in glomerules of 5–8, these mostly 4–7 mm. thick; bracts mostly subulate and about 2 mm. long; heads oblong-cylindric, 5 mm. long (including the corollas) 2 mm. thick; phyllaries 2 or 3, suborbicular-ovate, obtuse, 3–6-nerved, subscarios, ciliolate, essentially glabrous dorsally, 2.5–3 mm. long, 2–2.8 mm. wide, sometimes with a much smaller triangular-ovate acutish bractlet at base; pistillate flowers 3, all paleate, the hermaphrodite 3 or 4, usually epaleate, rarely 2 paleate; pales of the pistillate flowers similar to the phyllaries: pistillate corollas white, glabrous, minutely 4-toothed, 2.2 mm. long; hermaphrodite corollas white, finely hispidulous on the teeth, 3.2 mm. long; submature fertile ovaries obovoid, obcompressed, hispidulous above, 2 mm. long, 1.2 mm. wide; sterile ovaries ascending-pilose throughout, 2 mm. long.

ECUADOR: Valley of Pastaza River, between Baños and Cashurco, Province of Tungurahua, altitude 1300–1800 meters, 25 Sept. 1923, *A. S. Hitchcock* 21873 (TYPE no. 1,195,714, U. S. Nat. Herb.).

Nearest *Clibadium glomeratum* Greenm., of Costa Rica, which is immediately distinguished by its pilose-tomentose branches and inflorescence.

***Ichthyothere connata* Blake, sp. nov.**

Glabrous throughout; leaves opposite, ovate, sessile, conspicuously connate

at base, entire, thick, 7 or 9-plinerved; heads few, sessile in a terminal cluster; pales with erose acutish tips.

Herbaceous, simple or subsimple, 35 cm. high and more; stem stout (3–5 mm. thick), striate-angled, apparently glaucescent; internodes 3–7 cm. long, usually shorter than the leaves; leaves ovate or oval-ovate, 5.5–8 cm. long, 3–4.2 cm. wide, not reduced above, acute, at base clasping and connate for 2–6 mm., stiffly coriaceous, 7 or 9-plinerved from base and prominulous-reticulate, apparently glaucescent; heads about 7 mm. high, 5 mm. thick, about 3 or 4 in a terminal cluster, subtended by normal leaves; phyllaries suborbicular, obtuse, glabrous, strongly about 10-ribbed, the narrow thin margins erose above with subglandular teeth; pales acutish, subglandular-erose, strongly about 3-nerved.

BRAZIL: "Chapadao dos Veadeiros ou de Porto Leguro," Goyaz, Jan.–Feb. 18—, *A. Glaziou* 21648 (type in Kew Herb.; photograph and fragment, U. S. Nat. Herb.)

A very distinct species, nearest *Ichthyothere latifolia* (Benth.) Gardn.,² but readily distinguished by its conspicuously connate-clasping leaves. The type number was listed by Glaziou³ as *I. suffruticosa* Gardn., a species with elongate-lanceolate leaves. The sheet examined, on loan from the Kew Herbarium, now bears only two heads, which it has not seemed advisable to injure by dissecting. The stem and leaves appear to have been glaucous, but this appearance may be due to the deposition of a very thin layer of the corrosive sublimate used in poisoning.

ICHTHYOTHERE SCANDENS Blake, Journ. Washington Acad. Sci. 11: 301. *fig. 1.* 1921.

This species, originally described from a collection (no. 3430) made by Dr. F. W. Pennell at Libano, Department of Tolima, Colombia, altitude 1100–1300 meters, in 1917, has since been found to have an extensive range. It was collected many years ago at Colonia Tovar, Venezuela, by Fendler (no. 2560, in Gray Herb.), and has been found several times by Mr. Henry Pittier in Venezuela (as at El Portachuelo, State of Miranda). Prof. A. S. Hitchcock collected it (no. 21881) in the valley of the Pastaza River, 8 hours east of Baños, Province of Tungurahua, Ecuador, alt. 1300–1800 meters, on 25 Sept. 1923. A most unexpected extension of range is shown by typical specimens collected in the vicinity of Guápiles, Province of Limón, Costa Rica, alt. 300–500 meters, 12–13 March 1924, by Mr. Paul C. Standley (no. 37148). The last occurrence establishes the first record for the genus outside the South American continent.

The original specimen was described by the collector as a shrubby vine. Later collectors have called it a shrub or herb 4–5 ft. high. It is probable that this species varies in habit, like many other tropical plants.

² This name, based on *Latreillea latifolia* Benth., was properly published by GARDNER, Lond. Journ. Bot. 7: 424. 1848. The specimen listed (but not described), Gardner 3273, belongs to *I. terminalis* (Spreng.) Blake (*I. cunabi* Mart.). BAKER, Fl. Bras. 6³: 154. 1884, has referred Gardner's name to the synonymy of *I. cunabi*, and remade the combination *I. latifolia* for Bentham's plant.

³ Mém. Soc. Bot. France 3: 409. 1910.

***Polymnia latisquama* Blake, sp. nov.**

Tall herb; stem essentially glabrous; leaves ovate, large, firm-papery, coarsely serrate, triplinerved, short-decurrent on the upper part of the petiole; heads solitary, long-peduncled; outer phyllaries 4, ciliate, glabrous dorsally, suborbicular-ovate, about 1.8 cm. wide; rays yellow, about 8, the lamina about 3 cm. long.

Herb, 1.5–3 m. high; stem rather slender (2.5–3.5 mm. thick), simple or dichotomous at apex, striatulate; upper internodes 5.5–9 cm. long; leaves opposite; petioles cuneate-winged at apex, hirsute-pilose with sordid many-celled hairs, narrowly connate at base, the naked portion 1–4.5 cm. long; leaves ovate or the lower triangular-ovate, 9–23 cm. long, 4.5–15 cm. wide, acuminate, often slightly falcate, at base cuneate to (in the larger leaves) subtruncate, decurrent on the petiole for 0.5–2.2 cm., coarsely serrate with unequal teeth (1–3 per cm.) tipped with blunt somewhat callous mucros about 0.5 mm. long, above deep green, smooth, essentially glabrous, hirsute-ciliate with sordid many-celled hairs, beneath scarcely lighter green, glabrous or with a few hairs along the veins, triplinerved and beneath prominulous-reticulate; peduncles solitary, terminal, glabrous, naked, 7–9 cm. long; heads about 6 cm. wide; disk 2–2.5 cm. thick; outer phyllaries 4, decussate, suborbicular-ovate, obtuse to acute, coriaceous, sparsely hirsute-ciliate, glabrous dorsally, about 9-nerved, united for about 5 mm. at base, subcordate, 2–2.3 cm. long (from base of involucre), 1.7–2 cm. wide; inner phyllaries (subtending the rays) about 8, ovate, short-acuminate, submembranous, ciliate, stipitate-glandular on back, at maturity about 13 mm. long, 8 mm. wide; rays "bright yellow," pilose on tube and on nerves of back, fertile, the tube about 1.5 mm. long, the lamina oblong-elliptic, 3.5 cm. long, 9 mm. wide; disk flowers very numerous, infertile, their corollas yellow, sparsely hirsute on tube, 1 cm. long (tube 2.5 mm., throat thick-cylindric, 5.5 mm., teeth ovate, papillose-margined, 2 mm. long); pales oblong, membranous, obtuse, bluntly 1-dentate on each side below apex, somewhat pilose and stipitate-glandular, about 6-nerved, 9 mm. long, 3 mm. wide; ray achenes (scarcely mature) plump, obcompressed, glabrous, multistriatulate especially on back, epappose, 6 mm. long, 5 mm. wide; style of disk flowers 2-parted, the branches densely hirsute-pilose, with linear subulate hispidulous appendages.

COSTA RICA: Along stream, southern slope of Volcán de Turrialba, near the Finca del Volcán de Turrialba, alt. 2,000–2,400 meters, 22 Feb. 1924, *P. C. Standley* 35340 (TYPE no. 1,227,055, U. S. Nat. Herb.); wet thicket, Río Birris, southern slope of Volcán de Irazú, 23 Feb. 1924, *Standley* 35412.

The closest relative of this species is *Polymnia quichensis* Coulter, of Guatemala, which has more or less densely sordid-pilose stem and peduncles, narrower leaves with more tapering base, rough above and rather densely sordid-pilose on the veins and veinlets beneath, smaller, ovate, acuminate phyllaries (1–1.5 cm. long, 8–9 mm. wide), and much shorter rays (lamina about 1.2 cm. long).

***Melampodium cornutum* Blake, sp. nov.**

Slender annual; stem hirsutulous in lines, without long hairs; leaves slender-petioled, rhombic-ovate, crenate-serrate, membranous; heads small, sessile or subsessile, axillary and terminal; phyllaries 5, free nearly to base; rays minute; fruit with ovate appendage prolonged into a long slender recurved horn.

Plant about 15 cm. high, few-branched above, the branches long and divergent; leaves opposite; petioles of the larger leaves slender, 8–13 mm. long, narrowly marginate above, hirsutulous on margin; blades of the larger leaves rhombic-ovate, 2–3.2 cm. long, 1.2–2.3 cm. wide, acute, acutely cuneate at base, crenate-serrate above the entire cuneate base (teeth 5–7 pairs), triplinerved, sparsely hirsute-pilose above and on margin, beneath scarcely paler and practically glabrous; branch leaves smaller, short-petioled, often obtuse; heads about 4 mm. wide in anthesis; outer phyllaries 5, oval or oval-oblong, membranous-herbaceous, free nearly to base, obtuse or rounded, ciliate, about 5-nerved, 2–2.5 mm. long, 1.2–1.8 mm. wide; rays probably 5, greenish-yellow, bidentate, 3-nerved, about 1.3 mm. long, much shorter than the body of the fruit appendage; disk flowers about 3, their corollas greenish yellow, 1.3 mm. long, 4 or 5-toothed, the teeth bearing an internal apical tuft of hairs; pales oval, obtuse, scarious, glabrous, 1.3 mm. long, bearing a subterminal oblong central gland; fruit body ribbed and corrugate on the sides, about 1.5 mm. long, 1.3 mm. wide, the hood ovate, sparsely hispidulous-ciliate, sometimes muticous, obtuse, and about 1.2 mm. long, usually acuminate, about 2 mm. long and 1.6 mm. wide, and prolonged into a slender recurved sparsely hispidulous horn about 3.5 mm. long.

MEXICO: Alzada, Colima, 4 Nov. 1910, *C. R. Orcutt* 6601 (TYPE no. 1,209,590, U. S. Nat. Herb.).

Related to *Melampodium longicornu* A. Gray, which has similar heads and fruit, but is distinguished by its narrowly elliptic to lance-elliptic, sessile or subsessile leaves.

BOTANY.—*Venezuelan species of Valeriana, section Porteria*.¹ H. PITTIER, Caracas, Venezuela, and E. P. KILLIP, U. S. National Museum.

Two genera of the family Valerianaceae, *Porteria* Hook. and *Amblyorhinum* Turcz., were proposed in the year 1852, the former antedating the latter by a few months. A single species, *Porteria bractescens*, was described² by Hooker; five species were published³ under *Amblyorhinum*. Both Hooker's *P. bractescens* and the first species mentioned under *Amblyorhinum* by Turczaninow, *A. grandiflorum*, which should be considered the type of this genus, were based on Linden's 424, from Caracas. Turczaninow, after he had prepared the manuscript of his paper, evidently became aware of Hooker's article, for he added a paragraph (p. 173) in which he changed the name of his first species to *Porteria bractescens*, and transferred the five other species to *Porteria*.

The characters which Hooker especially emphasizes in describing *Porteria* are the large imbricate bracts which almost completely con-

¹ Received July 3, 1926. Published by permission of the Secretary of the Smithsonian Institution.

² Hook. Icon. Pl. 9: pl. 864. 1852.

³ Bull. Soc. Nat. Moscon. 25: 173. 1852.